ATTACHMENT A

Steps to becoming certified with the NJDEP Office of Quality Assurance

Application: You will need to send in a completed application (Parts I, II, and III). The application may be accessed via the NJDEP Office of Quality Assurance (OQA) website: www.nj.gov/dep/oqa .

Once at the NJDEP OQA homepage, see links on the right and left. Click on the link on the uppermost left ("Laboratory Certification Programs").

When you reach the Laboratory Certification Programs page, scroll down to the bottom of the page where you will find a link to "FY 2012 Application: Part I, Part II, Part III". You should access these forms, print and complete them, and forward them to the OQA via regular mail.

Part III is a large document (approximately 145 pages). You need only print the pages which reference the parameter(s) for which you are applying. For instance, if you are applying for certification for pH in water pollution, you need to access WPP03 (analyze-immediately water pollution). Under the column labeled "status", mark a letter "A" (for "applied") beside the pH parameter. On the far right-hand side, please note the approved methods column. If more than one approved method is listed, you must circle the method for which you are applying for certification. This procedure shall be followed for all parameters you are requesting.

Fees: You will need to submit applicable fees when forwarding your application package. The fee schedule can be found in Section 2.9 of The Regulations Governing the Certification of Laboratories and Environmental Measurements, N.J.A.C. 7:18 et seq. There is a link to this document on the Laboratory Certification Programs page, directly in the middle of the page. For example, for pH in water pollution, the following fees would apply: $825 (application fee) + $118 (category fee for water pollution analyze-immediately).

Standard operating procedure (SOP): You will need to send in an SOP for each method for which you are applying for certification. The best written SOPs are those that describe all aspects of sample collection, handling and analysis. An SOP must discuss calibration requirements and procedures (see Subchapter 8 of N.J.A.C. 7:18 et seq.). An SOP must discuss the proper handling of standards and reagents (see also Subchapter 5 of N.J.A.C. 7:18 et seq.). An SOP must include a reference to the method being used (e.g., Standard Methods 4500-H B). Also, an SOP must have a revision number and date, and must be signed by the laboratory manager, supervisor, or quality assurance officer. The SOP may include the instrument manufacturer's instructions, but it must adhere to both method and N.J.A.C. 7:18 requirements.

PT analysis: You must successfully analyze a proficiency testing (PT) sample prior to being granted certification. As a new applicant, you must secure your own PT from an approved PT provider. Laboratories applying for initial certification may obtain PT samples from any A2LA or ACLASS approved PT provider. A list of these providers

can be accessed at: http://www.a2la.org/dirsearchnew/nelacptproviders.cfm. In 2009 the State of New Jersey awarded a contract to ERA for routine PT studies. If your laboratory wishes to use ERA as your PT provider for initial certification you may click on the link to Environmental Resource Associates (ERA) on the NJDEP OQA homepage by locating and clicking on the link to "Proficiency Testing (PT) Samples". On the PT Samples page, scroll down to the section titled "NJDEP Approved Providers". When contacting the PT Provider you will need to inform the provider that you wish to obtain initial certification with the State of New Jersey and specify the applicable parameters and matrix being requested.

When you receive the PT sample, analyze it as though it were a real-world sample. That is, calibrate the instrument, and analyze the sample only once. Record the calibration and sample results in a logbook, as you would for a real environmental sample. When sending PT results to the provider the following must also be included; 1) the name and physical location of your laboratory, 2) the analytical method reference, and 3) the NJ laboratory identification number (if one has been assigned). The paperwork must also state that NJDEP OQA is to receive the PT results.

Please note that you may secure your PT sample at any time throughout the application process, but it is best to get the PT analyzed prior to the on-site audit.

On-site audit: You must also undergo an acceptable on-site audit prior to being granted certification. After submitting your completed application and fees, a laboratory certification officer will be assigned to you. You will be forwarded an Annual Certified Parameter List (ACPL), which will indicate your certification status ("applied"), along with a notification letter stating the name of the laboratory certification officer (LCO) and your laboratory identification number. When any parameters are listed as "Applied" you are not permitted to perform analysis of those parameters until the status is listed as "Certified", unless otherwise noted in previous correspondence from the Department.

Your assigned LCO will contact you to schedule an on-site audit. The LCO will perform the on-site audit and then prepare an on-site audit report. The on-site audit report will detail any deficiencies found during the on-site audit and your laboratory will be required to correct those deficiencies before certification will be granted. It is your laboratory's responsibility to ensure the requested documentation is submitted within a timely manner in order to obtain certification. No certification will be granted until all the deficiencies noted during an on-site audit have been addressed.

** Please note that laboratories are granted certification, not instruments or personnel. For this discussion, a laboratory is any place where analyses are performed. For instance, it could be a laboratory in the traditional sense or it could be a mobile laboratory, provided N.J.A.C. 7:18 and method requirements are adhered to and met. Also, these requirements shall be met regardless of whether the equipment in use is owned or rented. If the equipment is being rented your laboratory is still responsible for obtaining all the required information from your rental company. When equipment in use is being rented, daily calibrations shall be performed by your laboratory each day of use and calibration

records must be kept for every instrument. Equipment must be traceable by serial number.

The following information is from N.J.A.C. 7:18. It gives an idea of the major routine criteria we apply when auditing a laboratory.

pH:

- You must use an electronic pH meter capable of temperature compensation.
- Electrodes must be stored according to manufacturer's instructions.
- At least a two-point calibration must be performed with buffers that bracket the expected range of measurement and are at least three pH units apart (i.e. 4, 7, and/or 10).
- The meter must be calibrated daily or before each use.
- Buffers must be disposed of after each use.
- Buffer calibration values must be within ±0.05 pH units of the true value and recorded to two decimal places. If the calibration values are not within this range the meter shall be recalibrated.
- A calibration check standard must be analyzed immediately after the pH meter is calibrated with an acceptance criterion of ±0.10 pH units of the true value. This calibration check must be performed with a third buffer within the calibration range that is three pH units apart from the calibration buffer values (i.e. calibrated with a 4 and 10 pH buffer and then perform the calibration check with a 7 pH buffer). If the calibration values are not within this range the meter shall be recalibrated.
- A three-hour check standard using the third buffer must be performed once every three hours when the meter is in use longer than three hours, with an accuracy of ±0.20.
- The date and time of calibration, the initials of the analyst performing the calibration and the buffer value obtained during calibration must be recorded. The date and time, initials of the analyst performing the calibration check buffer, the value obtained for the check buffer and all sample measurements must also be recorded.
- Buffers must be labeled with the date received, date opened and expiration date.
- Though not a requirement, it is good lab practice to record the slope, in order to maintain the instrument more efficiently.

- Make sure PT samples are being recorded as a regular environmental sample either in a log book or on a field sheet.

TEMPERATURE:

- All temperature monitoring devices must be graduated in at least 0.50°C increments.
- All meters are verified against a NIST thermometer quarterly within the range of use.
- The NIST thermometer is graduated in at least 0.2°C increments & accompanied by certificate w/ matching identification number.
- All thermometers should be tagged w/ current calibration status.
- Applicable correction factors must be recorded and applied to all measurements.
- Records must be maintained for all temperature monitoring devices calibrated, including the serial number of NIST thermometer used, unique identification for all calibrated thermometers, or meters and any correction factors determined, results and date and technicians' initials recorded.

TURBIDITY:

- Primary solutions must be used for daily calibration check. For stand-alone turbidity meters, secondary gel standards must be used for daily calibrations.
- A daily standard must be analyzed for each range of use, each day of use.
- A Certificate of Analysis (C of A) must be available for each Turbidity Standard.
- Make sure PTs are recorded as a regular environmental sample, either in a log book or on a field sheet.
- For Flow through cells, **primary** solutions shall be used for the daily calibration check and the autocal solution cannot be used for turbidity calibration. The autocal solution cannot be used for calibration due to the fact that the turbidity concentration of the autocal solution is 0 NTU and not a true concentration. The turbidity standard used must be an actual NTU concentration within the range of use (0 NTU functions as a blank and not a standard). The percent recovery for this standard must be within ± 10% or the meter shall be recalibrated.

DISSOLVED OXYGEN (DO):

- The DO meter must be calibrated before each use against air or air saturated water.

- The DO meter calibration must be compared weekly using the Winkler titration. The value obtained during calibration must be within ± 0.3 mg/L of the Winkler value. If the value obtained during meter calibration is not within ± 0.3 mg/L of the Winkler value, the DO meter reading must be adjusted to the Winkler value prior to analysis. If the meter cannot be adjusted a calculated correction factor must be applied to the analytical results. If your laboratory is renting equipment the rental company may perform this procedure. If the rental company performs this procedure your laboratory must obtain all documentation associated with the procedure performed by the rental company including the titration records and C of A for the titrant used during the titration. Also, if you rent the equipment (traced by serial number) for more than one week after the Winkler titration was performed, your laboratory will be required to perform the next Winkler titration if that equipment is still in use (or obtain another calibrated meter from your rental company).

- For the Winkler titration: the sodium thiosulfate titrant must be standardized quarterly against potassium bi-iodate or potassium dichromate. If the titrant is purchased, the laboratory must have a C of A for each lot of purchased titrant. If missing, the manufacturer is to be contacted and the C of A obtained. If the purchased titrant is in use for longer than three months, then the purchased titrant must be re-standardized or a new lot / bottle opened.

- If titration kits are purchased it must contain a titrator or titration cartridge that is calibrated and/or graduated. **Note: If the kit contains an eye dropper it must be graduated to be used for titration. KITS THAT REQUIRE COUNTING OF "DROPS" FOR CALCULATION CANNOT BE USED.**

- The DO meter in use must be a membrane probe and not an optical (LDO) probe. **NOTE: LDO IS NOT APPROVED FOR USE AT THIS TIME AND CANNOT BE USED.**

CONDUCTIVITY

- An initial 5-point curve must be determined prior to analysis. If the instrument is rented, the rental company may determine the 5-point curve; however, analytical records documenting this must accompany the instrument when it is rented.

- Instruments with platinum electrodes must have the cell constant determined on an annual basis. Instruments with graphite or nickel electrodes have the cell constant built in and do not have to be verified annually. However, each time the cell constant is displayed during daily calibration the value displayed shall be recorded in the raw data records.

- A potassium chloride (KCl) standard must be analyzed daily or whenever conductivity samples are measured. In order to be acceptable, the value obtained must be within ±1% of the true value of the standard.

- If the KCl standard is purchased, the laboratory must have a lot specific C of A. If missing, the laboratory must obtain the C of A from the manufacturer.

- If the KCl standard is prepared by the laboratory, a bound notebook must be maintained containing records of the preparation of the standard. The records must include the manufacturer's name, lot number of the chemical, the date received, percent purity, the name of the chemical, the date of preparation, expiration date, signature of the analyst who prepared the solution, and final concentrations in specified units.

- Conductivity measurements must be recorded in either µmhos/cm or µS/cm.

- Make sure PTs are recorded as a regular environmental sample either in a log book or on a field sheet.

GENERAL

- The laboratory must use analytical reagent grade (AR) chemicals.

- The laboratory must examine stock and working standard solutions weekly and before each use for signs of decomposition; including, but not limited to, discoloration, formation of precipitates and concentration change due to obvious evaporation. If the laboratory finds that a solution shows any such conditions, the laboratory must discard the solution immediately.

- The laboratory must label all reagents and reagent solutions to indicate identity and, when applicable, titer, strength or concentration; recommended storage requirements, preparation date, expiration date, and any other pertinent information.

- The laboratory must immediately discard any reagent or reagent solution that is past its expiration date.

- The laboratory must use only standards of high purity for inorganic methods.

- The laboratory must mark all purchased chemicals, solutions, and standards with the date received by the laboratory and the date first opened by the laboratory.

- If a Department Sanctioned Analytical Method (DSAM) requires the use of special purity solvents or reagents, a laboratory must not perform an analysis pursuant to that DSAM using solvents or reagents of lesser purity.

- The laboratory must initially standardize prepared titrants used in the analysis of one or more parameters in Categories SDW02, WPP02, SHW04, or SHW09. The laboratory shall restandardize such titrants at least quarterly. The laboratory must re-standardize purchased titrants at least quarterly. In standardizing or restandardizing a titrant, the laboratory must use primary or secondary reagents as specified in the applicable DSAM.

- The laboratory must not use purchased standards or titrants unless they have a lot-specific certificate of analysis.

- The laboratory must retain records concerning chemical analyses. The records to be retained include raw data records, quality control data records (including records of all quality control checks under N.J.A.C. 7:18-5.5(c), chain-of-custody forms, laboratory reports, and the information required under (d) below. The laboratory must retain each record for at least five years after the date of the analysis, provided however, that the laboratory must retain records of analyses for ten years if the person requesting the analyses has informed the laboratory that the analyses were to be performed because of epidemiological or public health concerns. The Department may require that records be retained for longer periods.

- The laboratory must file and maintain data and other records in an accessible location on the laboratory's premises for at least one year after the date of analysis so that reviews can be conducted during on-site audits.